Central European Journal of Nursing and Midwifery

Cent Eur J Nurs Midw 2024;15(2):1107–1114
doi: 10.15452/CEJNM.2024.15.0008

ORIGINAL PAPER

Stress factors experienced by nursing and midwifery students

Slávka Mrosková[1], Alena Schlosserová[2], Jana Cuperová[1], Ľubomíra Tkáčová[1]

[1]*Department of Nursing, Faculty of Health Care, University of Prešov, Slovakia*
[2]*Department of Midwifery, Faculty of Health Care, University of Prešov, Slovakia*

Received August 31, 2023; Accepted May 14, 2024.

Abstract

Aim: Stress negatively affects students' health, self-esteem, and clinical performance. Although stress has been analyzed on a long-term basis and many clinical stressors are known, some of the factors potentially triggering stress have not been adequately studied, and the results are not consistent. Our research focused on an assessment of the stress intensity that nursing and midwifery students experience and the impact of ward type, difficulty in providing nursing care, and previous experience on perceptions of stress. *Design:* Cross-sectional study. *Methods:* The study sample (n = 258) consisted of 65.5% nursing and 34.5% midwifery students who had completed their clinical training in basal pediatric (36.5%), surgical (27.5%), and medical (36.0%) wards. We analyzed stress intensity (0–10), perception of the difficulty in providing nursing care from the student's perspective (0–10), and their previous experience. *Results:* Across the entire group of students, the stress intensity was 3.84 (SD = 2.71). Students providing care in pediatric wards (M = 4.72) experienced the highest stress intensity, especially when compared to students in medical wards (M = 2.69), ($p < 0.001$). The provision of care is most demanding in pediatric wards (M = 4.91) compared to surgical (M = 2.97) and medical wards (M = 3.08), ($p < 0.001$). Difficulty in providing care is significantly associated with stress intensity ($r = 0.548$). Previous clinical experience reduces the perception of stress. However, we found a significant decrease only in surgical and medical wards. *Conclusion:* To reduce the perception of stress in pediatric wards, attention needs to be paid to the quality of pre-clinical training focused on pediatric patient care. At the same time, it is important to increase the effectiveness of clinical education in pediatric wards.

Keywords: clinical experience, difficulty in providing nursing care, midwifery, nursing, stress, student, ward.

Introduction

The undergraduate training of nurses and midwives is very demanding and integrates theoretical and practical education (Frčová & Zlúkyová, 2020). Stress–academic, clinical, and external–accompanies the process of education, whereby clinical stress is experienced more intensely than academic stress (Jimenez et al., 2010). Stress affects almost every system of the human body, influencing how a person feels and behaves. While a minimal amount of stress stimulates and motivates, chronic and inappropriately managed stress negatively affects health (Fontana, 2016). Stress affects physical, emotional, and social health (Wu et al., 2021), is associated with anxiety (Onieva-Zafra et al., 2020) and low self-esteem (Edwards et al., 2010), affects students' quality of life (Kleiveland et al., 2015), and determines short and long-term memory, cognition, and learning (Yaribeygi et al., 2017). All of these changes negatively interfere with the learning process and student performance in clinical practice. As a consequence, students' satisfaction in clinical practice decreases, as do their self-confidence and clinical performance (Admi et al., 2018; Oermann & Lukomski, 2001; Ye et al., 2018), and it can lead to burnout (Gibbons, 2010).

Stress among students is a long-standing and intensively researched phenomenon. Numerous studies have been published focusing on the analysis of stress intensity, stressors, and coping strategies. A summary of the results is presented in recent reviews (Bhurtun et al., 2019; Majrashi et al., 2021; McCarthy et al., 2018). A wide range of factors can stimulate stress during clinical education. Dominant stressors include those related to the clinical environment and the education process. These include the provision of care to patients (Al-Gamal et al., 2018), lack of knowledge and skills (Bam et al., 2014), and interpersonal relationships with healthcare staff or teachers and mentors (Gurková & Zeleníková, 2018; Shaban et al., 2012). Providing care to patients is one of the most powerful stressors in the clinical

Corresponding author: Slávka Mrosková, Department of Nursing, Faculty of Health Care, University of Prešov, Partizánska 1, Prešov, Slovakia; email: slavka.mroskova@unipo.sk

environment. Death and dying, pain, patient suffering (Admi et al., 2018; Bahadir-Yilmaz, 2016), and / or fear of making mistakes and harming the patient (McBean Graham et al., 2016) are specific aspects of nursing that trigger stress in students. These factors are integrated into measurement tools (e.g., the Perceived Stress Scale, the Nursing Education Stress Scale) frequently used in the analysis of individual stressors in the clinical setting.

In particular, the initial phase of the undergraduate clinical education of nursing and midwifery students is focused predominantly on practicing and strengthening basal psycho-motor and communication skills and training in assessing the bio-psycho-social needs of patients. The implementation of these nursing interventions and their difficulty may also be perceived as a stressful phenomenon, but they have not been adequately researched and analyzed.

Clinical experience may influence students' perceptions of stress. Some studies have shown that the initial clinical experience is a stress-stimulating factor (Bagcivan et al., 2015; Kim, 2003). However, while Suen et al. (2016) found that a longer duration of experience increased stress intensity, other research (Admi et al., 2018; Bam et al., 2014) has suggested that students with a longer duration of experience or those with previous clinical experience report lower levels of stress.

The characteristics of the clinical environment, the organization of work, and the specifics and differences in nursing care (e.g., communication, attitude towards patients, pain management, extent and difficulty of nursing interventions, work with instruments, management of pharmacotherapy, or assessment of patients' needs) vary according to the type of hospital ward or outpatients' department; therefore, different clinical departments may trigger different levels of stress experienced by students. Compared to nursing homes, primary care, and outpatient clinics, hospital wards trigger more intense stress in students (Blomberg et al., 2014; Gurková & Zeleníková, 2018; Kleiveland et al., 2015). Hospital wards such as intensive care units, emergency departments (Aedh et al., 2015), and psychiatric wards (Onieva-Zafra et al., 2020) in particular stimulate more intense stress. These wards represent a superstructure in terms of both theoretical and clinical education. Few studies have addressed the comparison of stress in students in basal clinical departments, and their findings are not consistent (Khater et al., 2014; Oermann & Lukomski, 2001; Oermann & Standfest, 1997).

Aim

The aim of our research was the investigation of the stress intensity that nursing and midwifery students experience during clinical practice in basal wards, and, primarily, a comparison of stress by ward type, perception of difficulty in providing nursing care, and previous experience. Secondarily, we compared stress intensity by field of study.

Methods

Design

By means of a questionnaire, we assessed the following areas that students completed at the end of their clinical training in hospital wards:

- Intensity of clinical stress: Analyzed with the stress numerical rating scale, a scale also used in other research (Blomberg et al., 2014; Couarraze et al., 2021). A range of 0–10 was used (0 = no stress, 10 = extreme stress).
- Difficulty in providing nursing care: Each student assessed their subjective perceptions of difficulty in six domains. The authors subordinated their selection to a content analysis of the clinical teaching information sheets of first- and second year students, taking into account the main learning objectives of clinical practice in the lower years of undergraduate education in nursing and midwifery. The following domains were included in the analysis: assessment of bio-psycho-social needs, patient communication and handling, performing invasive procedures, patient safety, and working with instruments. Each student rated the domains on a scale from 0 (no difficulty) to 10 (extreme difficulty). The scale was tested on a sample of 173 students with a Cronbach alpha of 0.819 (Mrosková et al., 2023).
- Previous clinical experience in a ward (pediatric, medical, or surgical): yes or no.
- Socio-demographic and study factors (age, gender, place of residence, field of study, year of study, and type of ward).

Sample

We enrolled 258 respondents, who were predominantly female (n = 251; 97.3%). Most (62.0%; n = 160) resided in rural areas, while 38.0%

(n = 98) lived in urban areas. The mean age of respondents was 21 years (mean [M] = 20.60; standard deviation [SD] = 1.32; range = 19–30), with 55.0% of students (n = 142) at 20 years old, and 26.0% (n = 67) at 21 years old. Nursing students comprised 65.5% (n = 169) of respondents, whereas 34.5% (n = 89) were midwifery students. Over two-thirds (68.6%) were in their first year, with 31.4% in their second year. Ninety-four students (36.5%) had completed clinical practice in pediatric wards, 71 students (27.5%) in surgical wards, and 93 students (36.0%) in medical wards. More than half of students (56.2%; n = 145) reported previous experience of clinical practice in a given ward (pediatric, surgical, or medical).

Data collection

We distributed the questionnaires between September 2021 and December 2022. We included students of nursing and midwifery whose education in general nursing practice had the same foundation and who completed clinical practice in basal clinical departments in the first semesters of their studies. The inclusion criteria included: 1. Completion of clinical practice in a basic ward – a pediatric ward (infant, toddler, or older children's ward), a medical ward (medical, geriatric, neurology, or dermatology wards), or a surgical ward (surgical ward, traumatology, or orthopedic ward); 2. Clinical practice carried out in groups under the guidance of a teacher or mentor of the educational institution (one group = 9–11 students). Exclusion criteria: students who had completed clinical practice in an outpatient clinic or a specialist department, including gynecological, maternity, and neonatal wards; students who had completed practice in a basic ward individually under the guidance of a ward manager or mentor (one mentor = one student), since some studies have indicated that the number of students in a group and the way clinical teaching is conducted determine stress intensity (Blomberg et al., 2014; Gurková & Zeleníková, 2018). We conducted the research with the approval of the ethics committee at the educational institution.

Data analysis

For our statistical analysis, we used SPSS 25.0 software. The descriptive statistics methods included: total number (n), percentage (%), mean, standard deviation, and range calculation. We utilized the Skewness test to analyze the normal distribution of the variables, and, based on the results, we performed further statistical processing using parametric methods. The T-test, or ANOVA test, was used to compare the mean values. Regarding the significance of the ANOVA test, we performed a post-hoc Bonferroni analysis to allow comparisons between subgroups. We used the Pearson correlation to monitor the relationships between two interval variables. The chi-square test was used when comparing two categorical variables. Linear regression was used to assess the strength of the influence of independent variables on dependent variables. Statistical significance was at $p < 0.05$.

Results

Stress intensity

The mean stress intensity in all students was 3.84 (SD = 2.71; range = 0–10). Twenty-five students (9.7%) experienced no stress during their clinical practice (level 0), 114 students (44.2%) reported low stress intensity (levels 1–3), 69 students (26.7%) showed moderate stress intensity (levels 4–6), and 41 students (15.9%) experienced very strong stress intensity (levels 7–9). Nine students (3.5%) had to deal with extreme stress (level 10).

Stress and field of study

Nursing students experienced more stress during clinical practice (M = 4.13, SD = 2.88) than midwifery students (M = 3.28, SD = 2.26; t = 2.428, df = 256, p = 0.016).

Stress and type of ward

Students who underwent clinical training in pediatric wards experienced stress at the mean level of 4.72 (SD = 2.96), those in surgical wards experienced stress at the mean level of 4.16 (SD = 2.54), and students in medical wards experienced stress at the mean level of 2.69 (SD = 2.15, F = 15.229, df = 2, p < 0.001). The Bonferonni post-hoc analysis showed statistical differences in perception of stress between students in pediatric and medical wards (mean difference = 2.024, p < 0.001) and between students in surgical and medical wards (mean difference = 1.470, p = 0.001).

Of all the students who reported extreme stress (n = 9), up to 66.7% had completed their clinical practice in a pediatric setting. In addition, among the students perceiving very strong stress (n = 41), 53.7% were trained in a pediatric ward, and of the students with moderate stress (n = 69), 43.5% were also trained in a pediatric ward. The chi-square test indicated significant differences (p < 0.001) (Table 1).

While nursing students perceived more intense stress than midwifery students practicing in the pediatric wards (M = 5.70 versus M = 3.00, p < 0.001), the stress perception of both groups was similar

in surgical wards (nursing students: M = 4.17; midwifery students: M = 4.11, p = 0.942). Conversely, in medical wards, midwifery students reported more stress than nursing students (M = 3.32 versus M = 2.08, p = 0.005).

Difficulty in providing nursing care

We initially analyzed the difficulty in providing care across the entire cohort of students (n = 248). The global score was 3.72 (SD = 1.72). Areas with higher levels of difficulty included performing invasive procedures (M = 4.06), working with instruments (M = 3.82), and ensuring patient safety (M = 3.81). We used the ANOVA test to compare the perceived difficulty in providing care in each ward. The global difficulty were statistically highest in students providing care in pediatric wards (M = 4.91), compared to those in medical (M = 3.08) and surgical wards (M = 2.97, p < 0.001). The Bonferonni post-hoc analysis demonstrated statistical significance in global difficulty between pediatric and medical wards (mean difference = 1.833, p < 0.001) and between pediatric and surgical wards (mean difference = 1.941, p < 0.001) but not between medical and surgical wards (mean difference = 0.108, p = 1.000). A comparison of the different domains of care delivery in pediatric, surgical, and medical wards also demonstrated statistical significance. The only area where no significance was detected was 'patient handling' (p = 0.187), where we found comparable mean values (Table 2).

Table 1 Stress intensity and type of department

	Stress intensity				
Department	0 No stress	1–3 Low intensity	4–6 Moderate intensity	7–9 Very strong intensity	10 Extreme stress
Pediatric n (%)	9 (36.0)	27 (23.7)	30 (43.5)	22 (53.7)	6 (66.7)
Surgical n (%)	4 (16.0)	31 (27.2)	20 (29.0)	14 (34.1)	2 (22.2)
Medical n (%)	12 (48.0)	56 (49.1)	19 (27.5)	5 (12.2)	1 (11.1)
Total n (%)	25 (100.0)	114 (100.0)	69 (100.0)	41 (100.0)	9 (100.0)

Table 2 The difficulty in providing nursing care and type of department

	Department				
Domains of difficulty	All group M (SD)	Pediatric M (SD)	Surgical M (SD)	Medical M (SD)	sig.*
Patient communication	3.63 (2.38)	5.17 (2.40)	2.75 (1.87)	2.75 (1.89)	0.000
Handling	3.55 (2.38)	3.33 (2.44)	3.37 (2.15)	3.91 (2.46)	0.187
Invasive procedures	4.06 (2.81)	6.70 (2.35)	2.38 (1.64)	2.67 (1.80)	0.000
Working with instruments	3.82 (2.34)	4.68 (2.58)	3.44 (2.17)	3.23 (1.93)	0.000
Patient safety	3.81 (2.69)	4.86 (3.11)	3.28 (2.26)	3.15 (2.18)	0.000
Assessment of needs	3.58 (2.03)	4.83 (1.99)	2.78 (1.57)	2.92 (1.77)	0.000
Difficulty (global score)	3.72 (1.72)	4.91 (1.65)	2.97 (1.27)	3.08 (1.43)	0.000

*M – mean; SD – standard deviation; *Significance is identified by ANOVA test between groups.*

The comparison of difficulty in providing care between nursing (M = 3.69, SD = 1.80) and midwifery students (M = 3.77, SD = 1.59) did not indicate significant differences (p = 0.740).

Stress and difficulty in providing nursing care

Correlations between global difficulty and clinical stress demonstrated moderate, statistically significant associations, i.e., the higher the students' perception of difficulty in providing care to patients, the higher the stress intensity. We identified the highest correlation coefficient in the subgroup of students who had completed clinical training in pediatric wards (r = 0.576) (Table 3).

Table 3 Correlations between difficulty in providing nursing care and clinical stress

	Stress intensity			
	All group	Department Pediatric	Surgical	Medical
Difficulty (global score)	r: 0.548**	r: 0.576**	r: 0.419**	r: 0.544**

*r – correlation coefficient; **p < 0.01*

A linear regression across the entire group of students (n = 258) between global difficulty (an independent variable) and stress intensity (a dependent variable) revealed statistical significance (F = 109.695, df = 1, p < 0.001, adjusted R^2 = 0.297, B coefficient = 0.860). Subsequently, we performed a regression in the subgroup of students who practiced in pediatric, medical, and surgical wards. We identified the highest value for the B coefficient in the subgroup of students trained in pediatric wards, with difficulty in providing care to a pediatric patient corresponding to 32% of stress intensity (Table 4).

Table 4 Regression between difficulty in providing care and stress intensity

Department	Sig.	Adjusted R^2	B coefficient
Pediatric	0.000	0.325	1.033
Surgical	0.000	0.163	0.834
Medical	0.000	0.288	0.817

Stress and previous clinical experience

Students with previous clinical experience in a given ward – pediatric, surgical, or medical ward – reported lower stress intensity than students who had clinical experience in a ward for the first time. However, we found a significant decrease in clinical stress only in surgical (p = 0.003) and medical wards (p = 0.006) (Table 5).

Table 5 Intensity of clinical stress according to the type of department and previous experience

	Stress intensity		
Department	Students with previous experience M (SD)	Students without previous experience M (SD)	Sig.
Pediatric	4.31 (3.00)	5.10 (2.89)	0.197
Surgical	3.52 (2.48)	5.36 (2.23)	0.003
Medical	2.18 (1.97)	3.41 (2.20)	0.006

M – mean; SD – standard deviation

Discussion

The aim of our research was to assess the perception of stress and analyze the influence of selected factors on its intensity. Students experienced moderate levels of stress during clinical teaching, which is consistent with other research and reviews (Aedh et al., 2015; Bhurtun et al., 2019; Chen & Hung, 2014). We found that the intensity of stress varied significantly according to type of clinical department. Students who underwent their clinical education in pediatric wards showed the highest stress intensity, especially compared to the group of students training in medical wards as the results presented in Table 1 indicate. Among the students who experienced very strong stress (n = 41), 53.7% practiced in pediatric wards and only 12.2% in medical wards. Moreover, nine students reported extreme stress, 66.7% of whom practiced in a pediatric ward and 11.1% in a medical ward. Oermann and Lukomski (2001) found higher levels of stress in students during their clinical practice in pediatric wards, but the differences were not significant when compared to non-pediatric wards. The variation in the results is due to the fact that they included students practicing in different basal and specific hospital wards (including a psychiatric ward) in their comparison non-pediatric group. According to some authors, for example Ahmed and Mohammed (2019), clinical teaching in psychiatry represents a strong stress-stimulating factor, which may have led to the fact that comparison of stress intensity did not reveal significant differences.

According to the results of our research, the higher perception of stress experienced by students practicing in pediatric wards related to the higher difficulty of providing care to a pediatric patient, i.e., from the students' perspective, the care of a pediatric patient was more complex than care provided to an adult patient in medical or surgical wards. The most difficult areas of caring for the pediatric patients included performing invasive interventions (M = 6.70), communication (M = 5.17), child safety (M = 4.86), and assessing the child's needs (M = 4.83).

Care for a pediatric patient is different and more difficult, which contributes to the perception of stress intensity. Oermann and Lukomski (2001) found that 44% of students considered caring for children more difficult than caring for other types of patients and patients of other ages. The majority of students (86% of second-year students, 79% of third year students) reported that providing care for a pediatric

patient was more difficulty compared to caring for an adult patient (Cinová et al., 2020). Issues that induce anxiety, worry, and fear in students include communication with a child or family, the need to integrate the patient's family into care (Kostak et al., 2014; Liang et al., 2020), fear of causing physical harm to a child, causing pain (Lassche et al., 2013), and managing pharmacotherapy in a child (Lin et al., 2014; Oermann & Lukomski, 2001). However, students perceive even routine nursing activities and the meeting of children's physical and psychosocial needs (urine collection, monitoring vital signs, hugging the child, dressing, changing diapers and clothes, or physical examination) to be stressful and worrying (Liang et al., 2020; Tural Büyük, 2020).

We found that stress intensity in surgical wards was only slightly lower than in pediatric wards. The regression showed that providing care to patients in surgical wards accounted for only 16% of stress intensity. Thus, the perception of stress in surgical wards must be determined to a greater extent by other stressors, for example, students' interpersonal relationships with health professionals, teachers, or mentors. On the other hand, in pediatric wards, 32% of the intensity of stress can be explained by the difficulty of providing care to pediatric patients; thus, this factor plays a more important role in the perception of stress. The lower pre-clinical training of students may play a part in the difficulty of providing nursing care to a pediatric patient (Mrosková & Schlosserová, 2021), whereby the lack of knowledge and skills increases the pressure on the student in the clinical environment, decreases the sense of competence, and stimulates stress.

We found higher stress intensity in students with no pre-clinical experience, which is consistent with other studies (Admi et al., 2018; Bam et al., 2014). Interestingly, students with previous clinical experience in surgical and medical wards reported statistically lower levels of stress; however, the above phenomenon did not apply to pediatric wards. Lassche et al. (2013) reported that while rotations in adult wards help students stabilize or promote self-confidence, in pediatric wards, students feel like novices, despite their previous rotations. One possible explanation is the quality and quantity of the clinical experience, low interest in working in the ward, or unfulfilled student expectations. Low interest in working in the ward increases the perception of stress (Perng et al., 2020). Altay & Kiliçarslan Törüner (2014) also found that if students experience positive emotions during clinical education, stress levels decrease, and that satisfaction with clinical practice is associated with stress perception (Admi et al. 2018). Students have certain expectations of their clinical practice (Frčová & Zlúkyová, 2020; Oermann & Lukomski, 2001; Soler et al., 2021), such as the acquisition of practical skills and clinical competencies and the linking of theory to practice, which, if not sufficiently fulfilled, may affect stress levels. The quantity of clinical practice in pediatric wards also remains a problem. The lower number of hospitalizations of children compared to adults, the shorter length of hospital stays, the increase in the number of students on undergraduate healthcare programs (National Health Information Centre 2014; 2021; 2023), the increased pressure on patient safety and rights, and the presence of parents during hospitalization (Bultas, 2011; Hayden et al., 2014) are all factors that lead to fewer hours of clinical teaching and a lower frequency of student rotations in various pediatric wards. This results in fewer opportunities to provide nursing care to pediatric patients, fewer skills and clinical experiences acquired, and lower student confidence, which in turn makes relief of stress difficult.

Limitation of study

The main limitations of the study are that it was conducted at only one educational institution and that it was cross-sectional in nature.

Conclusion

The results of the research showed that the type of ward, difficulty in providing nursing care, and previous experience influenced the intensity of stress. Students experienced the most intense stress when working with a pediatric patient, which is related to their perception of the difficulty of providing care. In contrast to other research, it appears that not only the provision of care itself is a powerful stressor, but the perception of the difficulty and complexity of care is also a significant stressor. To reduce stress, attention needs to be paid to pre-clinical training of students in demonstration and simulation settings so that the student is better prepared to provide care to pediatric patients. At the same time, it is important to modify the process of clinical education in pediatric wards so that students receive not only repeated clinical experience of caring for sick children but also (and most importantly) positive experience of caring for sick children. Further research activity should also focus on the perception of stress in specific clinical departments.

Ethical aspects and conflict of interest

The authors declare no conflict of interest.

Funding

The research presented in this paper is part of the partial outputs of the KEGA project (031PU-4/2021).

Author contributions

Conception and design (SM, AS), data collection (SM, AS, JC, ĽT), data analysis and interpretation (SM, AS), manuscript draft (SM, AS), critical review of the manuscript (SM, JC), final approval of the manuscript (SM, AS, JC, ĽT).

References

Admi, H., Moshe-Eilon, Y., Sharon, D., & Mann, M. (2018). Nursing students' stress and satisfaction in clinical practice along different stages: a cross-sectional study. *Nurse Education Today*, *68*, 86–92. https://doi.org/10.1016/j.nedt.2018.05.027

Aedh, A. I., Elfaki, N. K., & Mohamed, I. A. (2015). Factors associated with stress among nursing students (Najran University–Saudi Arabia). *IOSR Journal of Nursing and Health Science*, *4*(6), 33–38.

Ahmed, W. A. M., & Mohammed, B. M. A. (2019). Nursing students' stress and coping strategies during clinical training in KSA. *Journal of Taibah University Medical Sciences*, *14*(2), 116–122. https://doi.org/10.1016/j.jtumed.2019.02.002

Al-Gamal, E., Alhosain, A., & Alsunaye, K. (2018). Stress and coping strategies among Saudi nursing students during clinical education. *Perspectives in Psychiatric Care*, *54*(2):198–205. https://doi.org/10.1111/ppc.12223

Altay, N., & Kiliçarslan Törüner, E. (2014). Determining pediatric nursing students' clinical stress and liking of children scores. *Dokuz Eylül Üniversitesi Hemşirelik Fakültesi Elektronik Dergisi*, *7*(3), 166–170.

Bagcivan, G., Cinar, F. I., Tosun, N., & Korkmaz, R. (2015). Determination of nursing students' expectations for faculty members and the perceived stressors during their education. *Contemporary Nurse*, *50*(1), 58–71. https://doi.org/10.1080/10376178.2015.1010259

Bahadir-Yilmaz, E. (2016). Academic and clinical stress, stress resources and ways of coping among Turkish first-year nursing students in their first clinical practice. *Kontakt*, *18*(3), e145–e151. https://doi.org/10.1016/j.kontakt.2016.08.001

Bam, V. B., Oppong, G. A., & Ibitoye, M. B. (2014). Stress and coping mechanisms of nursing students during clinical practice in Ghana. *Journal of Science and Technology*, *34*(2), 50–59. http://dx.doi.org/10.4314/just.v34i2.6

Bhurtun, H. D., Azimirad, M., Saaranen, T., & Turunen, H. (2019). Stress and coping among nursing students during clinical training: an integrative review. *Journal of Nursing Education*, *58*(5), 266–272. https://doi.org/10.3928/01484834-20190422-04

Blomberg, K., Bisholt, B., Engström, A. K., Ohlsson, U., Johansson, A. S., & Gustafsson, M. (2014). Swedish nursing students' experience of stress during clinical practice in relation to clinical setting characteristics and the organisation of the clinical education. *Journal of Clinical Nursing*, *23*(15–16), 2264–2271. https://doi.org/10.1111/jocn.12506

Bultas, M. W. (2011). Enhancing the pediatric undergraduate nursing curriculum through simulation. *Journal of Pediatric Nursing*, *26*(3), 224–229. https://doi.org/10.1016/j.pedn.2010.06.012

Chen, Y.-W., & Hung, Ch.-H. (2014). Predictors of Taiwanese baccalaureate nursing students' physio-psycho-social responses during clinical practicum. *Nurse Education Today*, *34*(1),73–77. https://doi.org/10.1016/j.nedt.2013.02.021

Cinová, J., Šantová, T., Šuličová, A., Derňárová, Ľ., Novotná, Z., Lizáková, Ľ., & Obročníková, A. (2020). Náročnosť absolvovania klinickej ošetrovateľskej praxe študentov vo vzťahu k detskému pacientovi [The difficulty of completing the clinical nursing practice of students in relation to a child patient]. *Grant Journal*, *9*(1), 11–16.

Couarraze, S., Saint-Jean, M., Marhar, F., Carneiro, J.-M., Siksik, G., Weider, A., Kurrek, M. M., Rey, T., Houze-Cerfon, Ch.-H., LeBlanc, V., & Geeraerts, T. (2021). Does prior exposure to clinical critical events influence stress reactions to simulation session in nursing students: a case-control study. *Nurse Education Today*, *99*, 104792. https://doi.org/10.1016/j.nedt.2021.104792

Edwards, D., Burnard, P., Bennett, K., & Hebden, U. (2010). A longitudinal study of stress and self-esteem in student nurses. *Nurse Education Today*, *30*(1), 78–84. https://doi.org/10.1016/j.nedt.2009.06.008

Fontana, D. (2016). *Stres v práci a v živote. Jak ho pochopit a zvládat* [Stress at work and in life. How to understand and manage it]. (1rd ed.). Portál.

Frčová, B., & Zlúkyová, K. (2020). Klinické cvičenia z pohľadu študentov ošetrovateľstva [Clinical exercises from the point of view of nursing students]. *Profese online*, *13*(2), 1–10. https://doi.org/10.5507/pol.2020.011

Gibbons, Ch. (2010). Stress, coping and burn-out in nursing students. *International Journal of Nursing Studies*, *47*(10), 1299–1309. https://doi.org/10.1016/j.ijnurstu.2010.02.015

Gurková, E., & Zeleníková, R. (2018). Nursing students' perceived stress, coping strategies, health and supervisory approaches in clinical practice: a Slovak and Czech perspective. *Nurse Education Today*, *65*, 4–10. https://doi.org/10.1016/j.nedt.2018.02.023

Hayden, J. K., Smiley, R. A., Alexander, M., Kardong-Edgren, S., & Jeffries, P. R. (2014). The NCSBN national simulation study: a longitudinal, randomized, controlled study replacing clinical hours with simulation in prelicensure nursing education. *Journal of Nursing Regulation*, *5*(2, Suppl.), S4–S40. https://doi.org/10.1016/S2155-8256(15)30062-4

Jimenez, C., Navia-Osorio, P. M., & Diaz, C. V. (2010). Stress and health in novice and experienced nursing students. *Journal of Advanced Nursing*, *66*(2), 442–455. https://doi.org/10.1111/j.1365-2648.2009.05183.x

Khater, W. A., Akhu-Zaheya, L. M., & Shaban, I. A. (2014). Sources of stress and coping behaviours in clinical practice among baccalaureate nursing students. *International Journal of Humanities and Social Science*, *4*(6), 194–202.

Kim, K. H. (2003). Baccalaureate nursing students' experiences of anxiety producing situations in the clinical

setting. *Contemporary Nurse*, *14*(2), 145–155. https://doi.org/10.5172/conu.14.2.145

Kleiveland, B., Natvig, G. K., & Jepsen, R. (2015). Stress, sense of coherence and quality of life among Norwegian nurse students after a period of clinical practice. *PeerJ*, *3*, e1286. https://doi.org/10.7717/peerj.1286

Kostak, M. A., Mutlu, A., & Bilsel, A. (2014). Experiences of nursing students in caring for pediatric cancer patients. *Asian Pacific Journal of Cancer Prevention*, *15*(5), 1955–1960. https://doi.org/10.7314/apjcp.2014.15.5.1955

Lassche, M., Al-Qaaydeh, S., Macintosh, Ch. I., & Black, M. (2013). Identifying changes in comfort and worry among pediatric nursing students following clinical rotations. *Journal of Pediatric Nursing*, *28*(1), 48–54. https://doi.org/10.1016/j.pedn.2011.12.008

Lin, F.-Y., Wu, W.-W., Lin, H.-R., & Lee, T.-Y. (2014). The learning experiences of student nurses in pediatric medication management: a qualitative study. *Nurse Education Today*, *34*(5), 744–748. https://doi.org/10.1016/j.nedt.2013.08.004

Liang, H.-F., Wu, K.-M., & Wang, Y.-H. (2020). Nursing students' first-time experiences in pediatric clinical practice in Taiwan: a qualitative study. *Nurse Education Today*, *91*, 104469. https://doi.org/10.1016/j.nedt.2020.104469

Majrashi, A., Khalil, A., Nagshabandi, E. A., & Majrashi, A. (2021). Stressors and coping strategies among nursing students during the Covid-19 pandemic: scoping review. *Nursing Reports*, *11*(2), 444–459. https://doi.org/10.3390/nursrep11020042

McBean Graham, M., Lindo, J., Bryan, V. D., & Weaver, S. (2016). Factors associated with stress among second year student nurses during clinical training in Jamaica. *Journal of Professional Nursing*, *32*(5), 383–391. https://doi.org/10.1016/j.profnurs.2016.01.004

McCarthy, B., Trace, A., O'Donovan, M., Brady-Nevin, C., Murphy, M., O'Shea, M., & O'Regan, P. (2018). Nursing and midwifery students' stress and coping during their undergraduate education programmes: an integrative review. *Nurse Education Today*, *61*, 197–209. https://doi.org/10.1016/j.nedt.2017.11.029

Mrosková, S., & Schlosserová, A. (2021). Príprava študentov na klinickú prax a náročnosť poskytovania ošetrovateľskej starostlivosti z pohľadu študentov na pediatrických oddeleniach [Preparation of students for clinical practice and the complexity of providing nursing care from the perspective of students in pediatric departments]. *Zdravotnícke štúdie*, *13*(2), 21–24.

Mrosková, S., Tkáčová, Ľ., & Cuperová, J. (2023). Vnímanie náročnosti poskytovania ošetrovateľskej starostlivosti študentmi ošetrovateľstva [Nursing students' perception of difficulties of nursing care]. *Health & Caring*, *2*(1), 1–14. https://doi.org/10.46585/hc.2023.1.2362

Národné centrum zdravotníckych informácií [National Health Information Centre]. (2023). *Štatistika hospitalizovaných v Slovenskej republike v roku 2022* [Statistics of hospitalized patients in the Slovak Republic in 2022]. Bratislava: NCZI. https://www.nczisk.sk/Aktuality/Pages/Statistika-hospitalizovanych-v-Slovenskej-republike-v-roku-2022.aspx

Národné centrum zdravotníckych informácií [National Health Information Centre]. (2021). *Zdravotnícka ročenka Slovenskej republiky 2020* [Health statistics yearbook of the Slovak Republic 2020]. Bratislava: NCZI. https://www.nczisk.sk/aktuality/pages/Zdravotnicka-rocenka-Slovenskej-republiky-2020.aspx

Národné centrum zdravotníckych informácií [National Health Information Centre]. (2014). Zdravotnícka ročenka Slovenskej republiky 2012 [Health statistics yearbook of the Slovak Republic 2012]. Bratislava: NCZI. https://www.nczisk.sk/Documents/rocenky/rocenka_2012.pdf

Oermann, M. H., & Lukomski, A. P. (2001). Experiences of students in pediatric nursing clinical courses. *Journal of the Society of Pediatric Nurses*, 6(2), 65–72. https://doi.org/10.1111/j.1744-6155.2001.tb00123.x

Oermann, M. H., & Standfest, K. M. (1997). Differences in stress and challenge in clinical practice among ADN and BSN students in varying clinical courses. *Journal of Nursing Education*, *36*(5), 228–233. https://doi.org/10.3928/0148-4834-19970501-08

Onieva-Zafra, M. D., Fernández-Muñoz, J. J., Fernández-Martínez, E., García-Sánchez, F. J., Abreu-Sánchez, A., & Parra-Fernández, M. L. (2020). Anxiety, perceived stress and coping strategies in nursing students: a cross-sectional, correlational, descriptive study. *BMC Medical Education*, *20*(1), 370. https://doi.org/10.1186/s12909-020-02294-z

Perng, S.-J., Sung, H.-Ch., Chen, Ch.-J., Lee, T.-Y., & Koo, M. (2020). Low interest in clinical practicum placement is associated with increased stress in nursing students in Taiwan: a cross-sectional survey study. *Nurse Education Today*, *84*, 104241. https://doi.org/10.1016/j.nedt.2019.104241

Shaban, I. A., Khater, W. A., & Akhu-Zaheya, L. M. (2012). Undergraduate nursing students' stress sources and coping behaviours during their initial period of clinical training: a Jordanian perspective. *Nurse Education in Practice*, *12*(4), 204–209. https://doi.org/10.1016/j.nepr.2012.01.005

Soler, O. M., Aguayo-González, M., Gutiérrez, S. S. R., Pera, M. J., & Leyva-Moral, J. M. (2021). Nursing students' expectations of their first clinical placement: a qualitative study. *Nurse Education Today*, *98*, 104736. https://doi.org/10.1016/j.nedt.2020.104736

Suen, W. Q., Lim, S., Wang, W., & Kowitlawakul, Y. (2016). Stressors and expectations of undergraduate nursing students during clinical practice in Singapore. *International Journal of Nursing Practice*, *22*(6), 574–583. https://doi.org/10.1111/ijn.12473

Tural Büyük, E. (2020). Problems of midwifery and nursing students in a neonatal care unit. *Progress in Health Science*, *10*(1), 6–12. https://doi.org/10.5604/01.3001.0014.1908

Wu, Ch.-S., Rong, J.-R., & Huang, M.-Z. (2021). Factors associated with perceived stress of clinical practice among associate degree nursing students in Taiwan. *BMC Nursing*, *20*(1), 89. https://doi.org/10.1186/s12912-021-00602-6

Yaribeygi, H., Panahi, Y., Sahraei, H., Johnston, T. P., & Sahebkar, A. (2017). The impact of stress on body function: a review. *EXCLI Journal*, *16*, 1057–1072. http://dx.doi.org/10.17179/excli2017-480

Ye, Y., Hu, R., Ni, Z., Jiang, N., & Jiang, X. (2018). Effects of perceived stress and professional values on clinical performance in practice nursing students: a structural equation modeling approach. *Nurse Education Today*, *71*, 157–162. https://doi.org/10.1016/j.nedt.2018.09.036

